

Docket No. ATOTP0104US

Serial No. 10/606,460

Remarks

Claims 28-45 and 50-72 remain in the application. Claims 53 and 64 have been withdrawn as not readable on the elected species.

Claims 58, 60, 61 and 68-70 are amended herein. Claim 58 is amended to correct the reference to "the" inhibitor, since 58 depends from claim 54/28, which already recite the inhibitor. Claim 60 is rewritten in independent format to incorporate its features into claim 32, and claims 61 (and 62 via 61) and 68-70 are amended to depend from claim 60.

Applicants respectfully request reconsideration of the claims of the present application based on the foregoing amendments and the following points.

Rejections of Claims 28-31, 36-42, 50-59, 60-67, 71 and 72

Claims 28-31, 36-42, 50-59, 60-67, 71 and 72 all stand rejected over the basic combination of Eckles, US 5,405,523, in view of Suzuki et al. US 4,888,218, together with various tertiary references cited and invoked as needed allegedly to find all of the various features of the claimed invention. Applicants respectfully traverse the rejections of all these claims as based on Eckles in view of Suzuki et al.

Simply stated, the Examiner's view of both Eckles and Suzuki et al. is clearly erroneous. Based on the clearly erroneous view of either of these references taken alone, there can be no *prima facie* obviousness with respect to claims 28-31, 36-42, 50-59, 60-67, 71 and 72. Based on the clearly erroneous view of both references, it is even more certain and clear that no obviousness exists and that the Examiner failed to state a *prima facie* case of obviousness with respect to these claims.

Eckles:

The Examiner contended in the Office Action that "Eckles teaches "A) immersing a metal substrate in an aqueous acidic *immersion* plating solution" (emphasis added). This is clearly erroneous. The bath taught by Eckles is an electroplating bath, not an immersion plating bath. See, e.g., Eckles' Abstract: "A

Docket No. ATOTP0104USSerial No. 10/606,400

zinc alloy *electroplating* bath...". While a part to be electroplated may be immersed into the electroplating bath, this does not convert the electroplating bath into an immersion plating bath. No person of ordinary skill in the art would understand Eckles to teach an immersion plating bath. Immersing a metal substrate in the bath of Eckles would not result in immersion plating of the substrate, absent the use of the electric current.

The differences between electroplating and immersion plating are deep and fundamental. Most obviously, immersion plating requires no externally applied electrical current to carry out the metal deposition as does electroplating. In immersion plating, the electrons are supplied by the base metal, which effectively acts as a reducing agent. Furthermore, the chemistry of the two kinds of baths is completely different. For example, in Eckles, the quaternary ammonium polymers additives are brighteners. These polymers would not act as inhibitors in Applicants' immersion plating baths. Thus, there is no way to construe the Eckles bath as anything but an electroplating bath, certainly not as an immersion plating bath.

Suzuki et al.:

The Examiner contended in the Office Action that Suzuki et al. "teaches a method for depositing a zinc alloy protective coating on aluminum substrate..." (emphasis added). This is clearly erroneous. Suzuki et al. does not disclose a zinc alloy. The ions in the Suzuki et al. bath are zinc and fluoride, and there is no second metal. The Suzuki et al. bath cannot possibly form an alloy, since there is no second metal to alloy with the zinc. Fluorine is not a metal and cannot form an alloy with zinc.

Thus, it would not have been obvious, and the Examiner failed to state a *prima facie* case of obviousness, to combine the teachings of Eckles and Suzuki et al. as contended by the Examiner. The references cannot be combined as asserted by the Examiner. The references relate to different arts and teach contradictory, incompatible conditions (electroplating vs. immersion plating). Even if combined,

Docket No. ATOTP0104USSerial No. 10/606,460

the references fail to disclose all the features of the invention, without selectively picking and choosing among the features.

The Examiner further contended that it would have been obvious to have used the nickel or copper ions of Eckles in the zinc plating bath of Suzuki et al., "especially in view of Applicant's admission on p. 2 that nickel, copper, or iron in a zincating bath improve adhesion of the zinc coating." Applicants' statement on p. 2 of the specification makes no such "admission". Applicants' statement, as even stated by the Examiner, relates to zincates. Zincates are zinc complexes formed in highly basic media. The statements on p. 2 were in relation to zincates of the prior art. In contrast, Applicants' claimed invention uses an acidic pH, from about 3.5 to about 6.5. This does not form a zincate; and any statements relating to zincates are not pertinent, and do not constitute "admissions" with respect to non-zincate baths. For this additional reason, Applicants' claimed invention has not been shown to have been obvious and the Examiner failed to state a *prima facie* case of obviousness with respect to claims 28-31, 36-42, 50-59, 60-67, 71 and 72.

For these reasons, Applicants respectfully request the Examiner to withdraw the rejections of claims 28-31, 36-42, 50-59, 60-67, 71 and 72 over the contended combinations of references all based on Eckles and Suzuki et al.

Rejections of Claims 32-35 and 43-45 and
The Examiner's Response to Applicants' Arguments

Applicants respectfully request reconsideration and withdrawal of the rejections of claims 32-35 and 43-45, for at least the following reasons, in addition to the reasons previously set forth by Applicants.

Regarding claims 32-35 and 43-45, the Examiner has indicated that Applicants' arguments regarding the concentration of Wernick are unconvincing because "generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence

Docket No. ATOTP0104USSerial No. 10/606,460

indicating such concentration or temperature is critical", citing MPEP 2144.05.II.A, and asserting that no such evidence has been presented.

The Examiner is requested to reconsider the rejection of claims 32-35 and 43-45 based upon Wernick and upon the contended combination of Suzuki et al. and Zelley.

Applicants suggest the Examiner refer again to MPEP 2144.05.II.A. The very first word, "generally", clearly implies that this is a generalization and is not always applicable. Furthermore, all of the cases cited in MPEP 2144.05.II.A refer to prior art ranges either actually encompassing the claimed ranges or having only very small, insubstantial differences. Of the cases cited in MPEP 2144.05.II.A, *In re Aller* is the only case in which there is no actual overlap, and the difference is small or insubstantial. The court in *In re Aller* found no patentable distinction between a claimed concentration of 10% and a range of 25-70% taught by the prior art. See MPEP 2144.05.II.A. *In re Peterson* involved the difference between claimed concentrations of 1-3% Rh and 14% Cr and the prior art disclosure of 0-7% Rh and 3-18% Cr; thus the claimed concentrations were *within* the ranges of the prior art. 65 USPQ2d at 1381. *In re Hoeschele* involved a claimed elastomeric polyurethane that was *within* the scope of polyurethanes disclosed by the prior art. 160 USPQ at 811. In *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, the prior art disclosed that both of the claimed drug agents had been used for the same purpose within a broad range of similar drug agents also used for the same purpose; thus the claimed combination was *within* the scope of the prior art. *In re Kulling* involved claims to specific amounts of wash liquids used for washing a metal sulfate cake, in which the washing of a metal sulfate cake with the same or similar liquids was disclosed in the prior art; thus, the claimed ranges were *within* the scope of the prior art. 14 USPQ2d at 1057. *In re Geisler* involved a claimed thickness range of 50 to 100 Angstroms for a protective layer which *overlaps at its end point* with the thickness range of 100 to 600 Angstroms disclosed by the prior art.

Docket No. ATOTP0104US

Serial No. 10/606,460

Thus, in every single case cited in MPEP 2144.05.II.A, except one, there was an *actual overlap* between the claimed range and the prior art teachings. In the one case where there was no actual overlap, the difference was insubstantial, a matter of a few percentage points, much less than one order of magnitude.

In the present case, the facts are quite different; so different in fact that MPEP 2144.05.II.A has neither relevance nor any legally proper relationship to the present facts. In the present case, the differences are orders of magnitude.

The nickel content of Warnick et al. is a far cry from the presently claimed invention. Warnick et al. specifically refers to the nickel content as "a trace". The actual nickel fluoborate concentration disclosed by Warnick et al. is 0.05 g/l, of which only 0.0123 g/l is nickel. This is combined with *three thousand times* as much zinc fluoborate, 150 g/l. This is more than three orders of magnitude different from the zinc concentration. The nickel simply cannot be present to form an alloy in this example. There is no suggestion whatsoever in Warnick et al. that any different concentration of nickel should be used, much less one that is at all comparable to that of the zinc. There is no suggestion whatsoever in Warnick et al. that nickel in any way would be considered to form an alloy with the zinc.

In contrast to Warnick et al., the presently claimed invention of claims 32 and 43 specifically require "from about 5 to about 250 g/l of nickel and/or cobalt ions", together with "about 1 to about 150 g/l of zinc ions". Thus, the presently claimed minimum nickel content is both *at least one hundred times higher* (i.e., two orders of magnitude higher) than the nickel content disclosed by Warnick et al. and is of the same order of magnitude as the claimed zinc ion concentration, not over three orders of magnitude lower as in Warnick et al.

Thus, the difference between the disclosure of Warnick et al. and the presently claimed invention is not a mere matter of small adjustments representing an optimization, but is instead a substantial, significant and *patentable* difference.

Furthermore, as Applicants previously argued, it is again respectfully submitted that before the cited guidelines provided in MPEP 2144.05.II.A can even

Docket No. ATOTP0104USSerial No. 10/606,460

be invoked, it is well established that there must be some teaching in the prior art that would motivate one skilled in the art to modify the prior art as suggested by the Examiner. That is, the motivation to modify the prior art must flow from some teaching in the art that suggests the desirability or incentive to make the modification needed to arrive at the claimed invention. As noted in In re Laskowski, 871 F.2d 115, 117, 10 USPQ 2nd 1397, 1399 (Fed. Cir. 1989).

The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification. (Quoting In re Gordon 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Applicants again submit that there is no suggestion or motivation in the art to significantly increase the amount of nickel present in the plating baths of Wernick beyond "a trace of nickel fluoroborate". A trace amount is illustrated in Wernick as containing 0.05 g/l of nickel fluoroborate which is equivalent to 0.0123 g/l of nickel. The teachings of Wernick would not motivate one skilled in the art to prepare a plating solution containing a minimum of 5 grams of nickel and/or cobalt ions as specified in claims 32-35, 43-45 and 60-70.

Similar considerations fully apply to the teachings of the Zelley reference. Zelley discloses the use of a highly caustic bath, containing 400 grams per liter (that is, about 40%) of sodium hydroxide. This bath would have a pH that is off the standard pH scale; that is, the pH of the Zelley bath would be higher than pH 14. The Examiner is respectfully reminded that pH is a logarithmic scale, and that each pH unit is equal to one order of magnitude difference in the hydrogen ion concentration. Thus, the difference between the pH of Zelley's bath (pH ≥ 14) and that of the claimed invention of claims 32 and 43 at a minimum, represents a hydrogen ion concentration difference of *seven orders of magnitude*, from the upper end of the presently claimed pH range of from about 3.5 to 6.5 (using the difference

Docket No. ATOTP0104USSerial No. 10/606,460

between pH 6.5 and pH 14). This is clearly not the sort of difference that would fall within the meaning or intent of MPEP 2144.05.II.A.

Furthermore, any person of ordinary skill in the art reading Zelley would quickly and readily recognize that the highly caustic conditions are necessary, even critical. First of all, no one of ordinary skill in the art would use such strongly caustic conditions unless it was necessary. Second, Zelley states, at col. 2, lines 13-16 that, although the zinc oxide content may be below 100 grams per liter, the ratio of caustic soda to zinc oxide should be between about 3:1 and 8:1, thus requiring a high level of NaOH relative to the zinc content. Third, Zelley shows a single example containing 400 grams per liter NaOH together with only 100 grams per liter of ZnO. Fourth, Zelley teaches "by employing an alkaline zincate bath of the type described, . . . in the amounts indicated above, I am able to produce zinc deposits" as desired (col. 3, lines 14-24). While Zelley does mention the iron group metal in this passage, it is clear that the caustic conditions are necessary. For all these reasons, it is clear that Zelley teaches that the high concentration of NaOH is necessary.

With respect to the content of the "alloying" metal, Zelley calls for "small amounts" of the iron group metal, e.g., from 0.1 to 1.5 gram per liter (col. 2, lines 43-46). Zelley teaches that higher amounts of the iron group metal tend to cause blistering of electroplates applied over the zinc deposit (col. 2, lines 51-52). These small amounts of "alloying" metal are quite distinct from the much higher amounts of nickel and/or cobalt recited in Applicants' claims, and nothing in Zelley would lead a person of ordinary skill to use the amounts recited in Applicants' claims.

The foregoing teaching of Zelley, that higher amounts of the iron group metal tend to cause blistering of electroplates applied over the zinc deposit, constitutes a teaching away from the presently claimed invention. The Federal Circuit has said on numerous occasions it is a general rule that references that teach away cannot serve to create a *prima facie* case of obviousness. *In re Gurley*, 27 F.3d 551, 553,

Docket No. ATOTP0104USSerial No. 10/606,460

31 USPQ2d 1131, 1132 (Fed. Cir. 1994). For this additional reason, the *prima facie* case contended by the Examiner must fail.

Further regarding the Zelley reference, the Examiner argued that Applicants' arguments that Zelley teaches the addition of nickel or cobalt in alkaline rather than acidic solution are unconvincing "because Zelley does not teach that the improved adhesion would not be experienced by acidic zincating baths." As shown above, Zelley teaches the importance of a highly caustic bath. While it may be true that Zelley does not teach explicitly that the improved adhesion would not be experienced by acidic zinc plating baths, Applicants submit that the Examiner's reliance on what Zelley does not teach is improper. Furthermore, the fact that Zelley teaches such high concentrations of caustic soda, which would have a pH of greater than 14, constitutes evidence of non-obviousness when compared to Applicants' claimed pH range. It is well established that a reference is relied upon as prior art for "what it teaches" to one skilled in the art. The Examiner cannot rely upon what a reference "does not teach".

Applicants respectfully submit that it is improper for the Examiner to select the disclosure of Zelley relating to nickel or other low concentration metal while ignoring the teachings of the reference as a whole, specifically those relating to the very high pH required.

Thus, the difference between the disclosure of Zelley and the presently claimed invention is not a mere matter of small adjustments representing an optimization, but is instead a substantial, significant and *patentable* difference.

The great significance of this difference in pH is proven by the Examiner's own cited reference. Suzuki et al., at col. 5, lines 16-20 teaches:

The pH of the bath is about 5.1 at 25° C. and 4.8 at 50° C. These pH values are widely different from those of the strong alkaline zincate baths of the prior art.

In addition to this statement, Suzuki et al. repeatedly distinguishes the prior art strongly alkaline zincate baths. See, e.g., col. 1, lines 42-48, disclosing highly

Docket No. ATOTP0104USSerial No. 10/606,460

alkaline baths almost exactly the same as those of Zelley. Zelley discloses such a prior art highly caustic zincate bath. See Suzuki et al. at, e.g., col. 2, lines 10-24, distinguishing the high viscosity of such highly alkaline baths, and at col. 5, lines 17-20. Thus, there can be no motivation for a person of ordinary skill to look to Zelley, the very prior art which Suzuki et al. distinguishes, for a possible combination in the absence of improper hindsight.

As shown by the foregoing, Suzuki et al, the very prior art relied upon by the Examiner, shows that the Examiner's position with respect to the combination of Zelley with Suzuki et al. is clearly erroneous.

Further, Applicants note that Suzuki et al. fails to teach or suggest any zinc alloy. The only alloys mentioned in Suzuki et al. are the various aluminum alloys disclosed as useful as the substrate. Suzuki et al. discloses only zinc fluoride and no other alloying metal in the baths.

Applicants note that in the Amendment filed July 20, 2004, at page 14, Applicants erroneously stated "Suzuki teaches a process for depositing a zinc alloy coating". This statement was and is incorrect. This incorrect statement apparently arose from Applicants' tracking of the words used in the Examiner's contentions in the Office Action to which the Amendment was responsive.

For all these reasons, Applicants respectfully submit that the Examiner failed to state a *prima facie* case of obviousness of claims 32-35 and 43-45 over either of Wernick et al. or the combination of Suzuki et al. with Zelley.

Conclusion

In view of the amendments to the claims and the foregoing rebuttal of the Examiner's contentions as to obviousness, it is respectfully submitted that all of the claims presently in the application fully patentably distinguish over the prior art and are in condition for allowance. Notice to such effect is respectfully requested.

In the event issues arise as a result of the filing of this paper, or remain in the prosecution of this application, Applicants request that the Examiner telephone the

Docket No. ATOTP0104USSerial No. 10/606,460

undersigned attorney to expedite allowance of the application. Should a Petition for Extension of Time be necessary for the present Reply to the outstanding Office action to be timely filed (or if such a petition has been made and an additional extension is necessary) petition therefor is hereby made and, if any additional fees are required for the filing of this paper, the Commissioner is authorized to charge those fees to Deposit Account #18-0988, Docket No. ATOTP0104US.

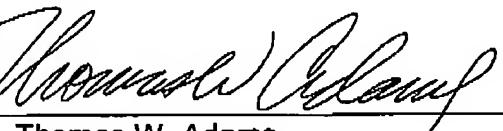
The Commissioner is expressly authorized to charge the fee (\$200.00) for one additional independent claim to Deposit Account #18-0988, Docket No. ATOTP0104US.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

Date: March 3, 2005

By



Thomas W. Adams
Reg. No. 35,047

1621 Euclid Avenue
Nineteenth Floor
Cleveland, Ohio 44115
(216) 621-1113

B:\Adams-Tom\Client Files\ATOTVATOT104\ATOTP0104US amd 3.wpd